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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,111	04/09/2004	David Karl Bidner	FGT 335CON (81100062)	1714

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EXAMINER	
NGUYEN, TU MINH	

ART UNIT	PAPER NUMBER
3748	

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/822,111	BIDNER ET AL.	
	Examiner	Art Unit	
	Tu M. Nguyen	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *09 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *18-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *22* is/are allowed.

6)☒ Claim(s) *18-21 and 23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 April 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *040904*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. An Applicant's Preliminary Amendment filed on April 9, 2004 has been entered.

Claims 1-17 have been deleted; and claims 18-23 have been added and are pending in the application.

Drawings

2. The drawings filed on April 9, 2004 are acceptable subject to correction of the informalities indicated on the attached "Notice of Draftsperson's Patent Drawing Review," PTO-948. In order to avoid abandonment of this application, correction is required in reply to the Office action. The correction will not be held in abeyance.

3. The drawings are objected to because in Figure 16, block 1612, --Y-- should be included above the horizontal line. Correction is required.

Specification

4. The abstract of the disclosure is objected to because the abstract describes an invention different from that in the claims. Correction is required. See MPEP § 608.01(b).

5. The disclosure is objected to because on page 3, line 27, "30" should read --36--. Appropriate correction is required.

Claim Objections

6. Claim 21 is objected to because on line 1 of the claim, "method" should read --system--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claim 23 is rejected under 35 U.S.C. 102(e) as being anticipated by Takahashi et al. (U.S. Patent 6,237,330).

As shown in Figures 1 and 26, Takahashi et al. disclose an emission control system for an internal combustion engine, comprising:

- a NOx absorbent (23) disposed in an exhaust passage of the internal combustion engine, that stores and reacts NOx under certain operating conditions;

- a NOx sensor (36) disposed in the exhaust passage downstream of the NOx absorbent, an output of the NOx sensor corresponding to a NOx concentration of exhaust gas flowing out of the NOx absorbent; and

- a controller (11) calculating an operating condition of the internal combustion engine and determining a deviation of the output value (NOXS) of the NOx sensor from a predetermined value (NOXSth) (step S527) when preselected engine operating conditions are met (step S522 with YES answer);

wherein the controller further performing a sulfur decontamination process based on engine operating conditions (step S529 and Figures 6-8).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. in view of Miyata et al. (U.S. Patent 6,214,207).

Re claim 18, as illustrated in Figures 1, 6-8, and 26, Takahashi et al. disclose an emission control system for an internal combustion engine, comprising:

- a NOx absorbent (23) disposed in an exhaust passage of the internal combustion engine that stores and reacts NOx under certain operating conditions;

- a NOx sensor (36) and a downstream air-fuel ratio sensor (33) disposed in the exhaust passage downstream of the NOx absorbent, an output of the NOx sensor (36) corresponding to a

NOx concentration of exhaust gas flowing out of the NOx absorbent and an output of the downstream air-fuel ratio sensor (33) corresponding to an oxygen concentration of exhaust gas flowing out of the NOx absorbent; and

- a controller (11) calculating an operating condition of the internal combustion engine and determining a deviation of the output value (NOXS) of the NOx sensor from a predetermined value (NOXSth) (step S527) when preselected engine operating conditions are met (step S522 with YES answer);

wherein the controller further indicating whether predetermined engine operating conditions are present (step S282 with YES answer), and in response to the determination, adjusting a fuel injection amount into the internal combustion engine based on the output (OSR) of the downstream air-fuel ratio sensor (33) (see Figures 6-8).

Takahashi et al., however, fail to disclose that a dual signal NOx sensor is used in place of the NOx sensor (36) and the downstream air-fuel ratio sensor (33).

Miyata et al. teach and suggest the use of a dual signal NOx sensor (2) to replace a single signal NOx sensor and an air-fuel ratio sensor, both of which are located downstream of a NOx catalyst (lines 16-51 of column 2). This dual signal NOx sensor provides accurate measurements of NOx concentration and oxygen concentration in the exhaust gas. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have replaced the NOx sensor (36) and the air-fuel ratio sensor (33) of Takahashi et al. with the dual signal NOx sensor of Miyata et al., since the application thereof would have provided a less complex exhaust gas purification system by eliminating the downstream air-fuel ratio sensor (33) in Takahashi et al.

Re claim 19, the modified system of Takahashi et al. further comprises a three-way catalyst (21) disposed in the engine exhaust passage upstream of the NOx absorbent (23).

Re claim 20, the modified system of Takahashi et al. further comprises an air-fuel ratio sensor (31) disposed in the exhaust passage of the engine upstream of the NOx absorbent.

Re claim 21, in the modified system of Takahashi et al., the controller (11) further changes engine operation from a lean air-fuel ratio to a stoichiometric or rich air-fuel ratio based on the output of the NOx sensor.

Allowable Subject Matter

11. Claim 22 is allowed.

Prior Art

12. The IDS (PTO-1449) filed on April 9, 2004 has been considered. An initialized copy is attached hereto.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of six patents: Boegner et al. (U.S. Patent 6,161,377), Zhang et al. (U.S. Patent 6,301,878), Takahashi et al. (U.S. Patent 6,341,487), Bidner et al. (U.S. Patent 6,487,850), Hepburn et al. (U.S. Patent 6,546,718), and Tanaka et al. (U.S. Patent 6,694,724) further disclose a state of the art.

Communication

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (703) 308-2833.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (703) 308-2623. The fax phone number for this group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1148.

Tu M. Nguyen

TMN

August 20, 2004

Tu M. Nguyen

Patent Examiner

Art Unit 3748